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## (54) Formwork panels

(57) A formwork panel comprises lightweight sheet (10), e.g. corrugated card or foamed plastics, with mesh (12), e.g., welded wire mesh, secured to one or both sides (11) by depressions (13), e.g. formed by corrugations (14) in the mesh, bonded to the sheet (10), the corrugations (18) forming air spaces (17), between renderings (16) applied to both sides of the panel, thus preventing a "cold bridge" being formed by the mesh.

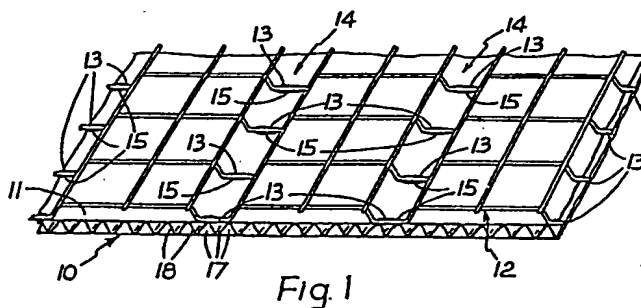


Fig. 1

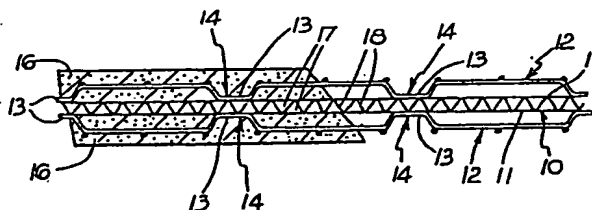


Fig. 2

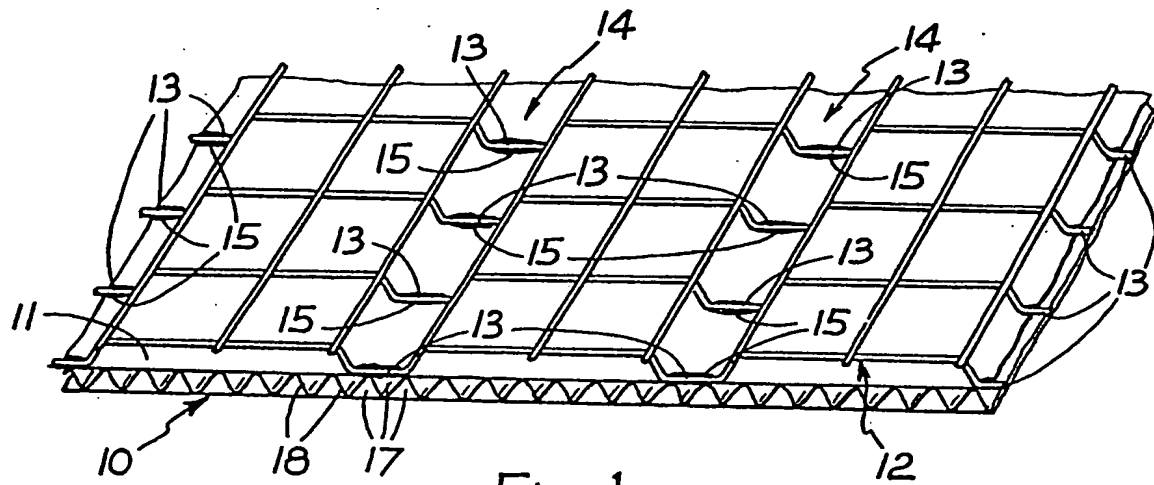


Fig. 1

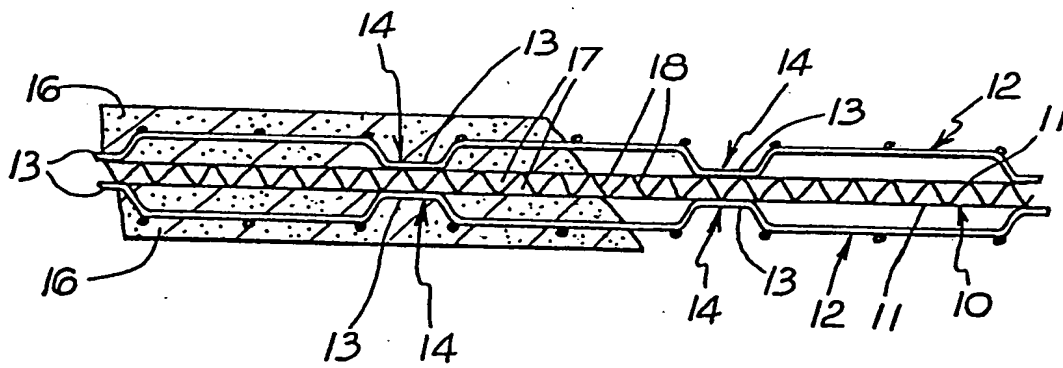


Fig. 2

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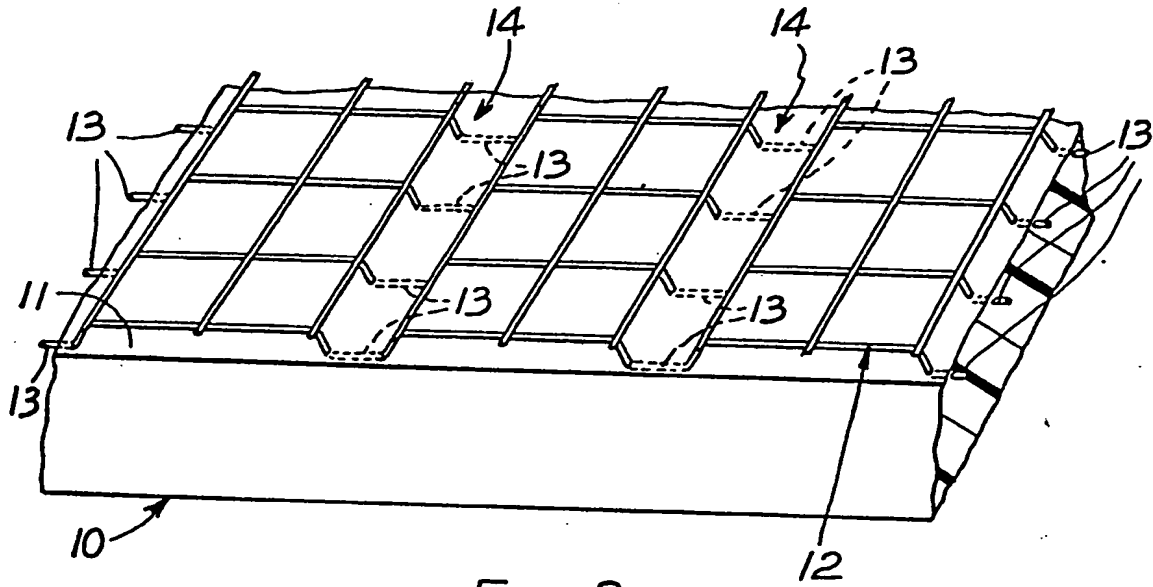


Fig. 3

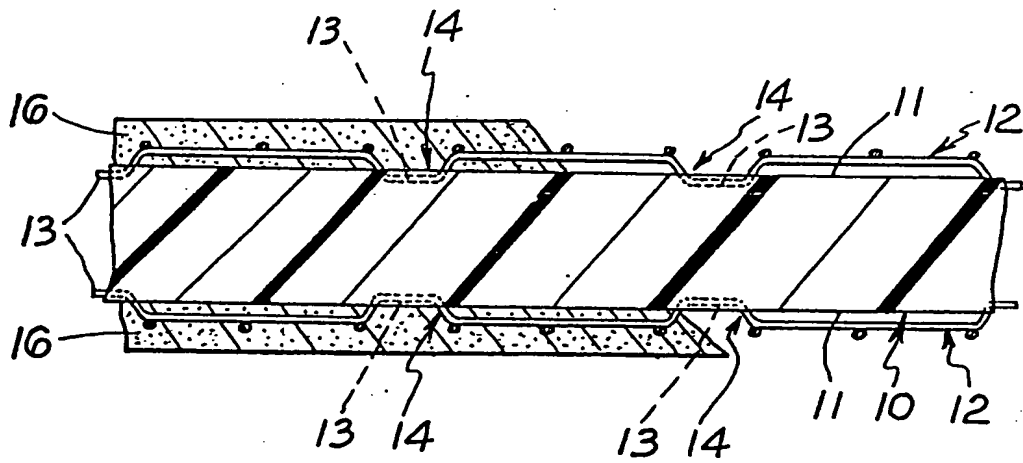


Fig. 4

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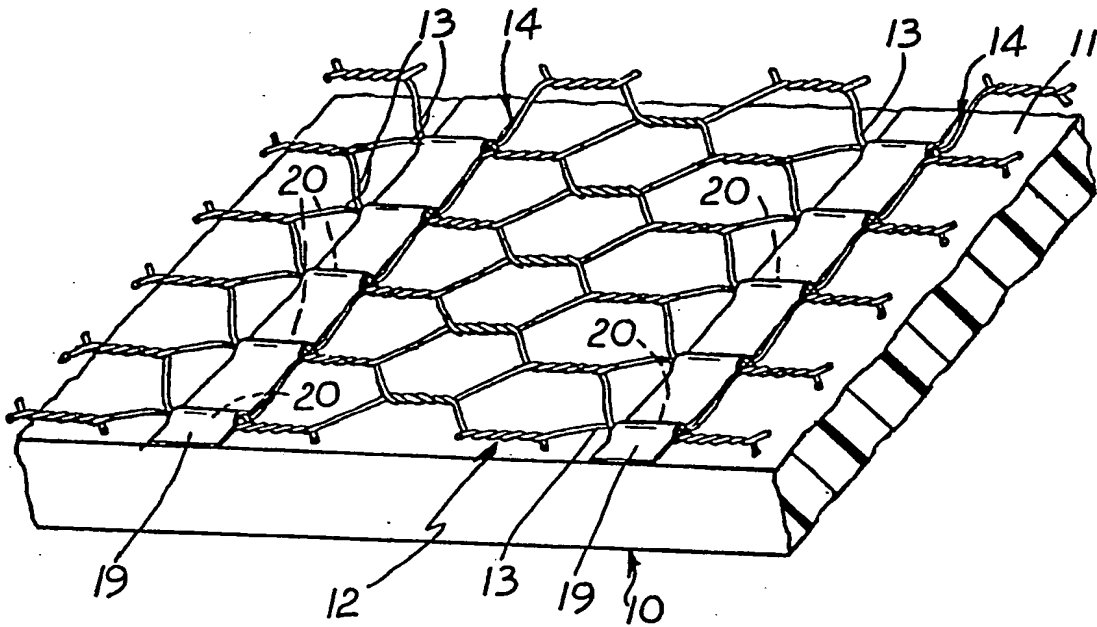


Fig. 5

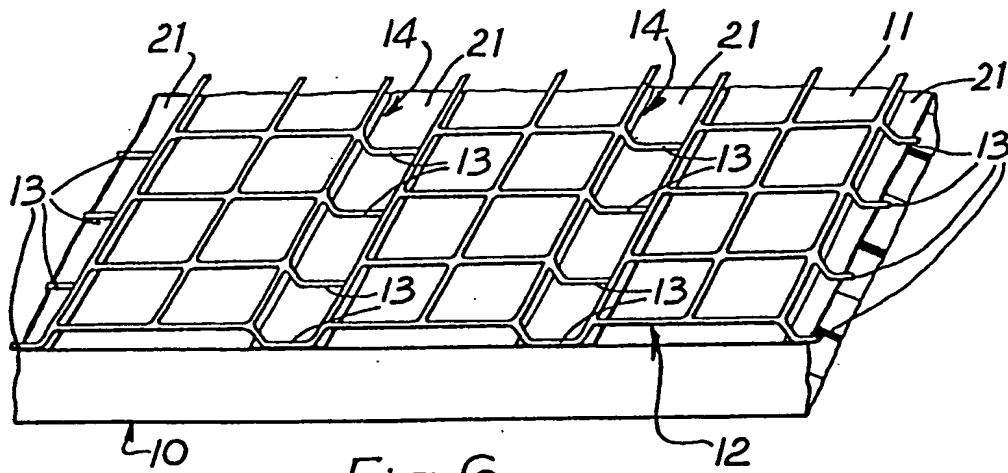


Fig. 6

## SPECIFICATION

## Formwork panels

5 This invention relates to formwork panels, which consist of lightweight sheets, possibly of insulating material, from one or both sides of which project wire portions for embedding in rendering material applied in-situ, to form walls or insulate existing walls to  
10 which the formwork panels are secured.

It is known to form or build up foamed plastics sheets incorporating "3-D wire mesh" (i.e., constructions consisting of or effectively resulting in welded wire mesh in two parallel planes with  
15 interconnecting wire portions, usually in zig-zag formation between the planes) with the interconnecting wire portions extending through the foamed plastics and beyond at least at one side (but usually at both sides). Such panels are expensive,  
20 because of the cost of making "3-D wire mesh" and complexities of incorporating it in foamed plastics during the formation of the foamed plastics or fabricating the mesh from zig-zags of wire and longitudinal wires welded to the peaks/troughs after  
25 "sandwiching" the zig-zags between strips of foamed plastics which also have to be bonded to each other. Another disadvantage of such panels is that interconnecting wire portions extending right through the foamed plastics from a "cold bridge"  
30 between renderings applied to both sides.

The object of the invention is to provide economical formwork panels that also do not have the disadvantage of forming a "cold bridge".

According to the present invention, a formwork  
35 panel comprises a lightweight sheet on at least one side of which is disposed mesh substantially in one plane spaced from the sheet except for a plurality of depressions in the mesh at least some of which are secured to the sheet material.

40 The lightweight sheet may be formed of corrugated paper or card to which the depressions in the mesh are bonded, whereby the mesh may add to the rigidity afforded to the paper or card by the corrugations. If mesh with depressions as aforesaid is  
45 disposed on both sides of the lightweight sheet, the spaces afforded by the corrugations can form air insulation between renderings applied to both sides of the panel, in which case the corrugated paper or card amounts to a carrier for the mesh on both sides,  
50 a provider of air space (or spaces) and a "cold bridge" preventer if wire mesh is used.

Conveniently, however, the lightweight sheet may be formed of foamed plastics material, which - in addition to providing air spaces - may be of good  
55 insulating thermoplastics or thermosetting plastics or other hardening or hardened plastics. The sheet of foamed plastics material may be of any thickness to provide the required degree of insulation, an appreciable thickness allowing the depressions in the  
60 mesh on one or both sides to be partly embedded in the foamed plastics material - without any risk of forming a "cold bridge", but the depressions in the mesh may be simply bonded to the surface of the foamed plastics sheet. Embedding of the depressions  
65 in thermoplastics may be effected by heating the

mesh (at least at the depressions) and pressing its depressions against the plastics material; alternatively, as also with thermosetting and other plastics, the depressions may be co-moulded in the  
70 foamed plastics as it is being formed into the lightweight sheet.

The mesh may be expanded metal, twisted wire mesh or welded wire mesh, preferably being plastics coated, galvanised or otherwise corrosion-resistant.

75 The depressions in the mesh are preferably formed by spaced parallel corrugations, preferably of rectangular or trapezoidal form, which also permit them to be readily secured to the lightweight sheet by overlying adhesive tape.

80 Alternatively, the mesh may be formed of plastics material or a composite glass-fibre and resin material, and the depressions in the mesh may be secured to the lightweight sheet by bonding or by double-sided adhesive tape.

85 A number of embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

*Figure 1* is an isometric view of a piece of formwork panel in accordance with the invention consisting of corrugated card and welded mesh bonded to one  
90 side;

*Figure 2* is a fragmentary section of a formwork panel similar to that of *Figure 1* but with welded mesh on both sides and shown with some rendering on  
95 both sides;

*Figure 3* corresponds to *Figure 1* but shows a piece of foamed plastics sheet material with welded mesh secured thereto by depressions in the mesh embedded in the plastics;

100 *Figure 4* is a fragmentary section of a formwork panel similar to that of *Figure 3* but with welded mesh secured on both sides and shown with some rendering on both sides;

*Figure 5* corresponds to *Figure 3* but shows twisted wire mesh with depressions secured by overlying  
105 adhesive tape to foamed plastics sheet;

*Figure 6* is similar to *Figures 3* and *5* but shows a plastics mesh with depressions secured by double-adhesive tape.

110 The formwork panel shown in *Figure 1* consists of a lightweight sheet 10 formed of corrugated card on one side 11 of which is disposed welded mesh 12 substantially in one plane spaced from the sheet 10 except for a plurality of depressions 13 in the mesh formed by spaced parallel trapezoidal corrugations  
115 14 and secured to the sheet material by bonding with waterproof adhesive 15. When used to form a wall (not shown) or insulate an existing wall (not shown) to which the formwork panel is secured, rendering material 16 (see *Figure 2*), such as cement, lightweight concrete or plaster, is applied through and over the wire mesh.

In *Figure 2* welded mesh 12 with depressions 13 is secured to both sides 11 of the corrugated card  
125 lightweight sheet 10 and rendered, the spaces 17 afforded by the corrugations 18 forming air insulation between the renderings 16, and the corrugated card 10 amounts to a carrier for the mesh 12 on both sides 11, a provider of air spaces 17, and a "cold bridge" preventer by separating the two sheets of mesh 12.  
130

The lightweight sheet 10 may alternatively - and conveniently - be formed of foamed plastics material, as shown in Figures 3 to 6, which material - in addition to providing air spaces (not shown) - may be of good insulating thermoplastics or thermosetting plastics (or other hardening or hardened plastics), with the depressions 13 in the mesh 12 on one side 11 (as in Figure 3) or on both sides (as in Figure 4) partly embedded in the foamed plastics material without any risk of forming a "cold bridge" if the sheet 10 is thick enough to keep the depressions 13 in the respective sheets of mesh 12 apart even when in register opposite each other.

In Figure 5 twisted wire mesh 12 has depressions 13 formed by spaced parallel corrugations 14 and is secured to one side 11 of foamed plastics sheet 10 by adhesive tape 19 overlying the twists 20 at the bottom of the depressions 13.

The wire mesh 12 in the embodiments of Figures 1 to 5 is preferably plastics coated, galvanised or otherwise corrosion resistant.

In Figure 6, however, the mesh 12 is formed of plastics material (or composite glass-fibre and resin material) moulded or pressed with depressions 13 which are secured to one side 11 of foamed plastics sheet 10 by double-sided adhesive tape 21.

Although Figures 5 and 6 show mesh 12 only on one side 11 of the foamed plastics sheet 10, mesh may be provided on both sides, and both sides rendered, in similar manner to Figures 2 and 4.

#### CLAIMS

1. A formwork panel comprising lightweight sheet on at least one side of which is disposed mesh substantially in one plane spaced from the sheet except for a plurality of depressions in the mesh at least some of which are secured to the sheet material.

2. A formwork panel as in Claim 1, wherein the lightweight sheet is formed of corrugated paper or card to which the depressions in the mesh are bonded.

3. A formwork panel as in Claim 2, wherein mesh with depressions as aforesaid is disposed on both sides of the lightweight sheet.

4. A formwork panel as in Claim 1, wherein the lightweight sheet is formed of foamed plastics material.

5. A formwork panel as in Claim 4, wherein the depressions in the mesh are embedded in the foamed plastics material.

6. A formwork panel as in Claim 5, wherein the lightweight sheet is formed of thermoplastics and wire mesh is used, embedding of the depressions in the mesh in the thermoplastics being effected by heating the mesh and pressing its depressions against the plastics material.

7. A formwork panel as in Claim 5, wherein the depressions are co-moulded in the foamed plastics as it is being formed into the lightweight sheet.

8. A formwork panel as in any one of the preceding Claims, wherein the mesh is welded wire mesh.

9. A formwork panel as in any one of the Claims 1 to 7, wherein the mesh is twisted wire mesh.

10. A formwork panel as in any one of the Claims 1 to 5, or Claim 7, wherein the mesh is expanded metal.

11. A formwork panel as in any one of Claims 8 to 10, wherein the mesh is plastics coated, galvanised or otherwise corrosion-resistant.

12. A formwork panel as in any one of the preceding Claims, wherein the depressions in the mesh are formed by spaced parallel corrugations.

13. A formwork panel as in Claim 12, wherein the corrugations are of rectangular or trapezoidal form.

14. A formwork panel as in Claim 13, except as appended to any one of Claims 5 to 7, wherein the corrugations in the mesh are secured to the lightweight sheet by overlying adhesive tape.

15. A formwork panel as in any one of Claims 1 to 4, wherein the mesh is formed of plastics material or a composite glass-fibre and resin material.

16. A formwork panel as in Claim 15, wherein the depressions in the mesh are secured to the lightweight sheet by double-sided adhesive tape.

17. A formwork panel substantially as hereinbefore described with reference to any one of the accompanying drawings.

18. A formwork panel in any one of the preceding Claims with rendering material applied through and over the mesh.